

SUFFOLK COUNTY COMMUNITY COLLEGE
COLLEGE-WIDE COURSE SYLLABUS
MAT115H (formerly MA28H)

I. COURSE TITLE:

Mathematics: An Historical Perspective

II. CATALOG DESCRIPTION:

Honors course showing how mathematical methods and thinking have changed through centuries and are evolving still. Emphasis placed on people and events that are understandable to students with ordinary mathematics backgrounds. Covers material from ancient to present times and attempts to trace impact that mathematics has had on modern culture. (*Offered fall semester at Grant Campus, spring semester at Ammerman campus.*) A-G / 4 cr. hrs.

III. COURSE GOALS:

- A. Present the evolution and development of mathematical ideas in their historical context.

IV. COURSE OBJECTIVES:

Upon successful completion of this course, students will be able to:

- A. demonstrate an understanding of the interplay between mathematics and other disciplines.
- B. demonstrate an understanding that mathematics is not a static field.
- C. demonstrate an understanding of the importance of the people behind the mathematics.
- D. demonstrate an understanding of the importance of some of the historical mathematical problems

V. Topics Outline with Timeline

Topics	Approximate Time (Including Examinations)
A. Development of the Number System <ol style="list-style-type: none"> 1. early Egyptian mathematics <ol style="list-style-type: none"> a. methods of counting and computing b. early algebraic and geometric models 2. Babylonian mathematics <ol style="list-style-type: none"> a. methods of counting and computing b. early algebraic and geometric models 	1 ½ weeks
B. Greek Mathematics <ol style="list-style-type: none"> 1. Pythagorus and Pythagoreans 2. Euclid and the elements 3. axiomatic systems and the parallel postulate 4. famous problems of Greek antiquity <ol style="list-style-type: none"> a. duplication of the cube b. trisection of the angle c. squaring the circle 5. Archimedes, Zeno and other notable Greek mathematicians 	2 weeks
C. Contributions of Islamic Mathematics <ol style="list-style-type: none"> 1. Hindu-Arabic numeration systems 2. Al Khwarjizmi and the beginning of algebra 	1 ½ weeks
D. The Deduction of Universal Laws <ol style="list-style-type: none"> 1. Copernicus, Kepler, and Galileo 2. Newton and the development of calculus 3. introduction of the scientific method 	2 ½ weeks
E. Other Major Mathematicians (select as time permits) <ol style="list-style-type: none"> 1. Non-Euclidean geometry <ol style="list-style-type: none"> a. Desargues b. Riemann c. Lobatchevsky d. Bolyai 2. probability theory <ol style="list-style-type: none"> a. Gauss b. Descartes c. Pascal 3. topology <ol style="list-style-type: none"> a. Euler 4. infinite sets <ol style="list-style-type: none"> a. Cantor 5. solving polynomial equations <ol style="list-style-type: none"> a. Cardano 	3 weeks

b. Tartaglia 6. group theory a. Abel b. Galois 7. game theory a. Von Neumann	
Optional Topics:	
F. Ethnomathematics – Suggested Subtopics 1. Inca quipus 2. Bushoony figure tracing 3. Maori rafter patterns 4. Celtic knot problems 5. Japanese temple drawings (Sangaku)	2 weeks
G. Recreational Mathematics – Suggested Subtopics 1. logic puzzles 2. magic squares	1 ½ weeks
H. Recent Developments in Mathematics	1 week

VI. Evaluation of Student Performance:

To be determined by the instructor

VII. Programs that require this course:

None

VIII. Courses that require this course as a prerequisite:

None

IX. Supporting Information:

Mathematics tutoring services, as well as video and computer aids, are provided for all students through the Math Learning Center (Ammerman Campus, Riverhead 235), the Center for Academic Excellence (Grant Campus, Health, Sports and Education Center 129), and the Academic Skills Center (Eastern Campus, Orient 213).